

impose outage reporting requirements under section 218, which grants the Commission broad investigatory powers to inquire into the management of the business, which would include, *inter alia*, VoIP service providers that are affiliates of common carriers subject to the Act.¹³⁰ Finally, section 4(o) directs the Commission to study of all phases of a problem for the purpose of effective communications in connection with safety of life or property.¹³¹ As explained above,¹³² we do just that when we collect and examine outage reports. Hence, the Commission is on solid statutory ground to adopt the subject reporting rules, in order to implement the requirements of section 615a-1 and carry out our duties under section 4(o) and are supported by our authority under sections 218 and 403.¹³³

62. We disagree with several commenters alternative assessments of the relationship between Section 615a-1 and our authority. AT&T, for instance, argues that section 615a-1 is not an express grant of authority to the Commission to order the regulation of VoIP service providers, but rather the Commission's role under that provision is to "pave the way" for VoIP service providers to provide 9-1-1 and E9-1-1 service by adopting regulations applicable to the owners and controllers of 9-1-1 facilities, who are ILECs, CLECs, and third-party providers, to make that possible.¹³⁴ AT&T points to the context of the enactment of Section 615a-1 as indicative of the limited nature of its scope.¹³⁵ Similarly, CTIA argues that "[i]t is a strain" to impose outage reporting on VoIP service providers because "the scope of 615a-1 contemplates only the 'duty of each IP-enabled voice service provider to provide 9-1-1 service and enhanced 9-1-1 service to its subscribers'" and section 615a-1(e)(1) "specifically limits the Commission's authority to 'require or impose a specific technology or technological standard.'"¹³⁶

63. AT&T's and CTIA's arguments are inconsistent with the express terms of the statute, which covers VoIP service providers and plainly is not limited to the owners and controllers of trunks and routers. Among the Commission rules that section 615a-1 codified are rules directly applicable to VoIP service providers. These rules impose detailed obligations on the manner in which interconnected VoIP providers provide E9-1-1. For instance, section 9.5(d) requires interconnected VoIP service providers to obtain from their customers the registered location of the end user, and to provide end users one or more methods of updating their registered location. Section 9.5(e) imposed on interconnected VoIP service providers notification and recordkeeping requirements concerning the limitations of the customer's E9-1-1 service. These requirements are now codified in the Communications Act. Although AT&T is

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http://www.att.com/Investor/Financial/Earning_Info/docs/2Q_11_IB_FINAL.pdf (last visited Feb. 3, 2012), Consumer Revenue Connections, note 5.

¹³⁰ See 47 U.S.C. § 218 ("The Commission may inquire into the management of the business of all carriers subject to this chapter, and shall keep itself informed as to the manner and method in which the same is conducted and as to technical developments and improvements in wire and radio communication and radio transmission of energy to the end that the benefits of new inventions and developments may be made available to the people of the United States. The Commission may obtain from such carriers and from persons directly or indirectly controlling or controlled by, or under direct or indirect common control with, such carriers full and complete information necessary to enable the Commission to perform the duties and carry out the objects for which it was created.").

¹³¹ Section 154(o) of the Act states: "For the purpose of obtaining maximum effectiveness from the use of radio and wire communications in connection with safety of life and property, the Commission shall investigate and study all phases of the problem and the best methods of obtaining the cooperation and coordination of these systems." *Id.* § 154(o).

¹³² See *supra* para. 32.

¹³³ 47 U.S.C. § 615a-1(c).

¹³⁴ AT&T Comments at 2-3.

¹³⁵ *Id.*

¹³⁶ CTIA Comments at 12.

correct insofar as section 615a-1 is intended to “fill” a “missing piece of the VoIP 9-1-1 Service provisioning puzzle,” the reason is not, as AT&T states, that the Commission does not have authority over interconnected VoIP service providers and does not need to regulate them directly to ensure that they provide E9-1-1 service. Rather, Congress recognized that the Commission does have this authority over interconnected VoIP service providers and already had used it, so that most of the additional rules needed at the time of section 615a-1’s enactment would pertain to the “owners and controllers of routers and trunks.”¹³⁷

64. Further, AT&T’s and CTIA’s arguments are inconsistent with the Commission’s previous views on the scope of section 615a-1. Following enactment of the NET 911 Improvement Act, the Commission in implementing section 615a-1 adopted rules in the *NET 911 Report and Order*, which requires interconnected VoIP service providers to comply with all applicable industry network security standards to the same extent as traditional telecommunications carriers when accessing capabilities traditionally used by carriers.¹³⁸ This standard is comprehensive and not limited to network security standards that are ostensibly E9-1-1-related, in recognition that “the security of the nation’s emergency services network depends on many interlocking measures that collectively preserve the integrity of the 9-1-1 system from unauthorized access and use.”¹³⁹

65. With respect to CTIA’s concern about technological neutrality expressed in section 615a-1(e)(1) limitation, nothing in this *Report and Order* violates that limitation. Section 615a-1(e)(1) states that “[n]othing in [section 615a-1] shall be construed to permit the Commission to issue regulations that require or impose a specific technology or technological standard.”¹⁴⁰ The outage reporting requirement and threshold in this *Report and Order* do not favor or disfavor any particular technology. To the contrary, our action today arguably corrects an imbalance that existed by requiring some providers of voice and 9-1-1 service to report outages, but not others. Moreover, the rules adopted today treat interconnected VoIP service providers virtually identically to the way Part 4 current defines “outage,”¹⁴¹ sets the threshold that triggers reporting of an outage,¹⁴² and the outage reporting process.¹⁴³ Accordingly, we find AT&T and CTIA’s views unpersuasive.

¹³⁷ See H.R. Rep. 110-442 at 1012-13 (at Background and Need for Legislation, “H.R. 3403 does not reverse the Commission’s actions to date. The Commission, however, only imposed E-911 requirements on providers of VoIP service that today service as a substitute for traditional wireline telephone service. It did not require entities—typically LECs—that control certain key facilities and infrastructure that are needed to complete 911 and ED-911 calls to give VoIP providers access to those facilities and that infrastructure. As a result, VoIP service providers entered into commercial arrangements with LECs or third parties to gain access to 911 components. The Commission also concluded that it lacked authority to extend the liability protections afforded to wireline and wireless 911 calls to VoIP 911 calls. H.R. 3403 would resolve these issues....”), 1018 (at Section-by-Section Analysis of the Legislation, “New subsection [615a-1](1a) is not intended to reverse the Commission’s actions to date concerning the duty of VoIP service providers to provide 911 and E-911 services.

¹³⁸ *Implementation of the NET 911 Improvement Act of 2008*, WC Docket 08-171, *Report and Order*, 23 FCC Rcd 15884, 15901 ¶ 38 (2008).

¹³⁹ *Id.*

¹⁴⁰ 47 U.S.C. § 615a-1(e)(1). See H.R. 110-442 at 1020 (at “Section-by-Section Analysis of the Legislation”) “New subsection [615a-1](e) would provide that nothing in H.R. 3403 be construed to permit the Commission to require or impose a specific technology or technology standard. The Commission may, however, adopt technology-neutral, performance-based standards or requirements”.

¹⁴¹ See 47 C.F.R. § 4.5(a).

¹⁴² See 47 C.F.R. § 4.9.

¹⁴³ See 47 C.F.R. § 4.11.

66. In addition, the Commission has ancillary authority to ensure both that interconnected VoIP providers fulfill their duty to provide 9-1-1 services and to address major obstacles to their doing so, such as failures in underlying communications networks.¹⁴⁴ We find unpersuasive the arguments of several commenters that take the view that the Commission has no ancillary authority over VoIP service providers. CTIA argues that “the proposed rules sweep too broadly to be linked to the expressly delegated responsibility to provide 9-1-1 services, and the current record evidence does not begin to demonstrate that the proposed rules here are needed, considering the unique nature of IP networks.”¹⁴⁵ AT&T similarly argues that the *NPRM* fails to make the factual case for supporting the Commission’s ancillary authority to adopt the proposed outage requirements, contending that:

[T]he fact that networks are disrupted does not translate into an inability to offer 911 service. In brief, networks are temporarily disrupted, the disruption is corrected, and service continues. There is nothing in extending the Part 4 rules that will change that fact. Indeed, Congress did not expect, and the Commission cannot ensure, that networks over which 911 Services ride will never be disrupted. And the imposition of outage reporting obligation will not of themselves [sic] effect any changes in the way VoIP Providers provision their services, in general, or 911 Services, in particular.¹⁴⁶

67. Verizon makes similar arguments that the Commission has provided no explanation regarding how its proposed requirements would result in ensuring that VoIP providers meet their statutory duty to provide 9-1-1 service.¹⁴⁷ We have done so here. The relationship between network reliability and reliable 9-1-1 service is clear; without reliable network operations, there can be no reliable 9-1-1 service. As explained throughout this decision, reporting obligations act as a critical element to enable the Commission to identify and evaluate lapses in the provision of 9-1-1 service in order to enable providers to meet their obligations under the statute. Indeed, as a general matter, the Commission regularly imposes reporting requirements on its regulatees to ensure compliance with statutory and regulatory obligations.¹⁴⁸

¹⁴⁴ Under the definition of ancillary authority recently stated by the U.S. Court of Appeals for the District of Columbia Circuit, it is clear that the Commission may exercise ancillary authority when “(1) the Commission’s general jurisdictional grant under Title I [of the Communications Act] covers the regulated subject and (2) the regulations are reasonably ancillary to the Commission’s effective performance of its statutorily mandated responsibilities.” *Comcast Corp. v. FCC*, 600 F.3d 642, 646 (D.C. Cir. 2010) (quoting *Am. Lib. Ass’n v. FCC*, 406 F.3d 689, 691-92 (D.C. Cir. 2005)). The provision of interconnected VoIP is “communication by wire or radio” within the general jurisdictional grant of section 2 of the Act. 47 U.S.C. § 152; see also *Comcast*, 600 F.3d at 646-47; *IP-Enabled Services*, Report and Order, 24 FCC Rcd 6039, 6045 ¶ 10 (2009). Further, collecting outage information from interconnected VoIP providers as adopted here is “reasonably ancillary” to ensuring that interconnected VoIP providers are able to satisfy their 9-1-1 obligations under the Act as implemented in our Part 9 rules, and to enable the Commission to assist in improving the reliability of these mandated services. See *supra* notes 125, 127, and 128 and accompanying text.

¹⁴⁵ CTIA Comments at 14.

¹⁴⁶ AT&T Comments at 4.

¹⁴⁷ Verizon Comments at 34. Verizon also claims that there is a lack of evidence that interconnected VoIP service providers experience recurring, widespread outages, and that there is evidence showing that interconnected VoIP service providers employ protective measures to prevent outages from occurring and to minimize any impact on customers. *Id.* at 34-35.

¹⁴⁸ See, e.g., note 111 *supra* (noting extension of CPNI requirements to interconnected VoIP service providers, and adoption of annual certification requirement); see also, e.g., 47 C.F.R. § 73.3615 (requiring that broadcasters (continued....))

And the imposition of such reporting requirements in this instance is appropriate not only to enable the Commission to ensure that providers are complying with their legal obligations, but also to enhance the reliability of such service industry-wide.

D. Interconnected VoIP Service Providers – Outage Metrics and Thresholds

1. Facilities-Based vs. Non-Facilities-Based Interconnected VoIP Services

68. As discussed below, we conclude that the outage reporting requirements adopted herein should apply to both facilities- and non-facilities-based interconnected VoIP services.

69. *Proposal.* As the Commission has recognized, interconnected VoIP services increasingly are viewed by consumers as a substitute for traditional telephone service.¹⁴⁹ As of December 31, 2010, 31 percent of the more than 87 million residential telephone subscriptions were provided by interconnected VoIP providers.¹⁵⁰ But unlike legacy telephone service, the Commission has no mechanism to identify outages of VoIP service that impact end users and, thus, cannot address the cause of 9-1-1 outages relating to VoIP service. Accordingly, in the *NPRM* we proposed to extend our outage reporting rules to both facilities-based and non-facilities-based interconnected VoIP service providers – just as 9-1-1 service requirements apply to these providers.¹⁵¹ Both groups are subject to the E9-1-1

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annually file Ownership Report FCC Form 323); 47 C.F.R. §§ 1.2110(n) (requiring that wireless licensees that have been granted designated entity (DE) status annually certify that its DE status remains valid).

¹⁴⁹ See High-Cost Universal Service Support; Federal-State Joint Board on Universal Service; Lifeline and Link Up; Universal Service Contribution Methodology; Numbering Resource Optimization; Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Developing a Unified Intercarrier Compensation Regime; Intercarrier Compensation for ISP-Bound Traffic; IP-Enabled Services, WC Docket No. 05-337; CC Docket No. 96-45; WC Docket No. 03-109; WC Docket No. 06-122; CC Docket No. 99-200; CC Docket No. 96-98; CC Docket No. 01-92; CC Docket No. 99-68; WC Docket No. 04-36, *Order on Remand and Report and Order and Further Notice of Proposed Rulemaking*, 24 FCC Rcd 6475, 6590 ¶ 210 n.670 (2008); see also Telephone Number Requirements for IP-Enabled Services Providers; Local Number Portability Porting Interval and Validation Requirements; IP-Enabled Services; Telephone Number Portability; CTIA Petitions for Declaratory Ruling on Wireline-Wireless Porting Issues; Final Regulatory Flexibility Analysis; Numbering Resource Optimization, WC Docket No. 07-243; WC Docket No. 07-244; WC Docket No. 04-36; CC Docket No. 95-116; CC Docket No. 99-200, *Report and Order, Declaratory Ruling, Order on Remand, and Notice of Proposed Rulemaking*, 22 FCC Rcd 19531, 19547 ¶ 28 (2007).

¹⁵⁰ See *Local Telephone Competition: Status as of December 31, 2010*, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission (Oct. 2011), Figure 2 - Wireline Retail Local Telephone Service Connections by Technology and Customer Type as of December 31, 2010, available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2011/db1007/DOC-310264A1.pdf (last visited Feb. 3, 2012). See *supra* note 6 and accompanying text.

¹⁵¹ Facilities-based interconnected VoIP service providers own and operate the broadband access communications infrastructure required to deliver VoIP services. They may provide retail VoIP services directly to residential and business customers or they may provide wholesale VoIP services to other businesses, including non-facilities-based VoIP service providers that resell VoIP service to end users. See *Local Telephone Competition: Status as of December 31, 2010*, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission (Oct. 2011), Figure 5 – Interconnected VoIP Subscribership by Reported Service Features as of December 31, 2010. Approximately 15 percent of the 31.7 million total interconnected VoIP subscriptions reported for December 2010 was sold as stand-alone service by providers that are not incumbent local exchange carriers, including some facilities-based providers, such as cable companies and also “over the top” non-facilities-based providers. *Id.* Unlike Vonage or several other non-facilities-based VoIP services, facilities-based VoIP is not an application that is issued “over-the top” of a high-speed Internet access service purchased by a consumer. Significantly, facilities-based VoIP customers do not need to subscribe to broadband Internet service, and their providers do not route their respective traffic over the public Internet. Rather, the facilities-based VoIP service is based on specifications that typically involve the use of a managed IP network. Many companies offer IP- (continued....)

obligations in Part 9 of the rules.

70. *Comments.* Several commenters agree that, if the Commission adopts rules extending outage reporting to interconnected VoIP services, the rules should apply equally to both facilities-based and non-facilities-based interconnected VoIP services. For example, NASUCA and the New Jersey Division of Rate Counsel take this position as both types of VoIP services are already subject to 9-1-1 service obligations.¹⁵² Comcast points out that other interconnected VoIP providers, whether facilities-based or non-facilities-based, similarly hold out their services as replacements for traditional voice services and promote the 9-1-1 capabilities of their services. Comcast maintains that, like their facilities-based competitors, non-facilities-based providers are in the best position to determine when their services experience an outage. Therefore, Comcast supports the Commission's efforts to extend reporting requirements to these services.¹⁵³

71. Some commenters argue against inclusion of non-facilities-based, interconnected VoIP services. For example, Vonage, which provides services that ride "over the top" of the public Internet and its end-users' broadband connections, argues that the Commission should not require interconnected VoIP providers to report on outages occurring on other providers' networks (such as the public Internet and their subscribers' broadband services providers' networks), because it and other similarly situated providers have no visibility into other providers' networks.¹⁵⁴ TIA and MegaPath, Inc. (MegaPath) similarly argue that non-facilities based interconnected VoIP service providers should be responsible for reporting an "outage" only of their own service components.¹⁵⁵ The VON Coalition states that for many VoIP providers, infrastructure and interconnected VoIP are not inherently linked.¹⁵⁶ Vonage uses the example that it knows at all times the status of its own network elements. However, according to Vonage, it cannot monitor the underlying broadband networks over which its service travels any more than it can monitor the status of the PSTN networks to which its service connects.¹⁵⁷

72. *Discussion.* We adopt our proposal to extend the outage reporting rules to both facilities-based and non-facilities-based interconnected VoIP service providers.¹⁵⁸ We agree with NASUCA and Comcast that we should extend outage reporting rules to both facilities-based and non-facilities-based interconnected VoIP service providers, because both groups of providers are subject to the same statutory and regulatory duties to provide E9-1-1, and subscribers of non-facilities-based interconnected VoIP services should benefit from our work with industry to ensure robust access to emergency services just as subscribers of facilities-based interconnected VoIP and traditional services do.

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enabled services over these managed networks, including voice and video services that are distinct from the high-speed Internet access service.

¹⁵² NASUCA Comments at 6.

¹⁵³ Comcast Comments at 2-3. Comcast explains that "[T]he fact that over-the-top providers do not control the underlying networks does not jeopardize their ability to detect when a subscriber's service is down. A variety of important components, such as applications, soft switches, and gateways, do fall within the control of the service provider, whether over-the-top or facilities-based. When a customer of an over-the-top interconnected VoIP service attempts to complete a call, the service provider makes routing decisions without the input, or even the knowledge, of the underlying network operators." *Id.* at 3.

¹⁵⁴ Vonage Comments at 4.

¹⁵⁵ MegaPath Comments at 8; TIA Comments at 6.

¹⁵⁶ VON Coalition Comments at 1.

¹⁵⁷ Vonage Reply Comments at 3.

¹⁵⁸ Included are affiliated and non-affiliated entities that maintain or provide communications networks or services used by the provider in offering such communications.

73. We acknowledge that there are relevant technical differences between facilities-based and non-facilities based interconnected VoIP services. TIA and other non-facilities-based interconnected VoIP providers state that they should only be responsible for reporting outages on service components over which they have control, and maintain that non-facilities-based interconnected VoIP service providers are unable to observe the inner workings of other providers' networks.¹⁵⁹ Because of its inability to see into underlying broadband networks, Vonage states that it may not be technically feasible for non-facilities-based interconnected VoIP service providers to comply with mandatory reporting of outages of such networks.¹⁶⁰

74. Therefore, we require non-facilities-based VoIP service providers to report service outages that involve facilities that they own, operate, lease, or otherwise utilize. Our intention is that non-facilities-based VoIP providers report service outages that meet the threshold to the extent that they have access to information on service outages affecting their customers. As both facilities- and non-facilities-based interconnected VoIP providers are able to use NMS to determine the connectivity of their end-devices,¹⁶¹ we expect that they will be able to report on the loss of service and/or connectivity to their customers' terminals. VoIP terminals are IP-enabled, thus, they also may be polled with Internet Control Message Protocol (ICMP) and SNMP polls or GET/TRAP messages, keep alive mechanisms, *etc.* The non-facilities VoIP providers may not be able to tell where connectivity has failed if the failure has occurred in another provider's network which the non-facilities-based provider uses to deliver its service, but it can tell that its call management (SIP Proxy, Call Manager, *etc.*) cannot reach the end-user devices, and thus, an outage has occurred that affects its customers. They should be able to report significant outages where their call management systems have lost connectivity to their customers' end-user devices. Such situations may be coded in a manner such that the "outage cause" or other reporting parameter indicates that it is a failure outside the control of the non-facilities-based VoIP provider. This is important because, if a broadband data network that the non-facilities-based interconnected VoIP provider uses to deliver its service fails, the Commission will not have any visibility that the data service failure also resulted in the loss of non-facilities interconnected VoIP and E9-1-1 services that ride "over-the-top." Also, even where broadband networks provide facilities-based VoIP service, there will still be a number of end-users that will use a non-facilities-based interconnected VoIP service instead of the broadband service associated with the facilities-based interconnected VoIP service provider. Thus, the Commission would not know the true loss of voice service to end-users, as it is actually facilities-based plus non-facilities-based outages that should be counted. Thus, we will require both facilities-based and non-facilities-based interconnected VoIP to report service outages. This type of reporting will allow the Commission to determine the true impact and scope of the outage and allow a cross-check on significant outage reporting at the control plane (call control) and data plane (call path – public Internet).

2. Definition of Outage of Interconnected VoIP Service

75. As set forth below, we conclude that the current Part 4 definition of "outage" should apply also to outages of interconnected VoIP service.

76. *Proposal.* Currently, under Part 4 of our rules, an "outage" is defined to include "a significant degradation in the ability of an end user to establish and maintain a channel of communication

¹⁵⁹ MegaPath Comments at 8; TIA Comments at 6; Vonage Comments at 4.

¹⁶⁰ Vonage Reply Comments at 3.

¹⁶¹ At the FCC Workshop, Mark Adams stated: "So at a basic level, we obviously do device-level monitoring, and based on the types of devices, we know generally – not always, but generally – is it completely service-affecting, or is it going to result in some kind of degradation. So, we do device-level monitoring. We monitor our end points for on or off status right through the switches, and through our cable modems." Mark Adams, Executive Director, Technology Operations, Cox Communications, *FCC Workshop*, Transcript at 106.

as a result of failure or degradation in the performance of a communications provider's network."¹⁶² Our current rules tailor the definition of a reportable significant degradation to communications over cable, telephony carrier tandem, satellite, SS7, wireless, or wireline facilities.¹⁶³ Broadband networks operate differently than legacy networks, so the impact of outages is likely to be different. This difference does not appear to require a different definition of outage for reporting purposes, and in the *NPRM*, the Commission proposed to apply the existing definition of outage to interconnected VoIP, tailored to the characteristics of the broadband technologies. In the *NPRM*, the Commission also proposed a broad standard of a "loss of generally-useful availability and connectivity" to represent the degradation in the performance of a communication provider's network and sought comment on packet loss, round-trip latency, and jitter as appropriate metrics to trigger the outage reporting.¹⁶⁴

77. *Comments.* Many commenting parties support applying the current Part 4 definition of an "outage" to interconnected VoIP service providers.¹⁶⁵ Other parties raise concerns with the definition of "outage." CTIA is concerned about a regulatory scheme for VoIP service that would treat perceived or actual performance degradation as a reportable outage, and argues that this would diverge from current wireline and wireless outage reporting requirements that are based on actual loss of service to customers.¹⁶⁶ MegaPath states that the current outage definition is overly broad and fails to take into

¹⁶² 47 C.F.R. § 4.5(a).

¹⁶³ With respect to cable facilities, reporting is required when an outage of at least 30 minutes is experienced on any facilities owned, operated, leased, or otherwise utilized that: "(1) Potentially affects at least 900,000 user minutes of telephony service; (2) Affects at least 1,350 DS3 minutes; (3) Potentially affects any special offices and facilities . . . ; or (4) Potentially affects a 9-1-1 special facility . . ." 47 C.F.R. § 4.9(a). With respect to tandem switches (or their equivalents) and interoffice facilities used in the provision of interexchange or local exchange communications, reporting is required when an outage is experienced for at least 30 minutes in which at least 90,000 calls are blocked or at least 1,350 DS3-minutes are lost. If technically feasible, these providers must use real-time blocked calls to determine whether criteria for reporting are met. 47 C.F.R. § 4.9(b). With respect to satellite facilities, reporting is required when an outage of at least 30 minutes is experienced on facilities owned, operated, leased, or otherwise utilized that manifests itself as a failure of any of the following key system elements: One or more satellite transponders, satellite beams, inter-satellite links, or entire satellites. In the case of Mobile Satellite Service, with limited exception, the failure of any gateway earth station is also a reportable outage. 47 C.F.R. § 4.9(c)(1). All satellite communications providers must report any outages of at least 30 minutes on any facilities owned, operated, leased, or otherwise utilized that manifests itself as: "(i) A loss of complete accessibility to at least one satellite or transponder; (ii) A loss of a satellite communications link that potentially affects at least 900,000 user-minutes . . . ; (iii) Potentially affecting any special offices and facilities . . . other than airports; or (iv) Potentially affecting a 9-1-1 special facility . . ." 47 C.F.R. § 4.9(c)(2). With respect to SS7 facilities, reporting is required when an outage of at least 30 minutes is experienced on facilities owned, operated, leased, or otherwise utilized that manifests "as the generation of at least 90,000 blocked calls based on real-time traffic data or at least 30,000 lost calls based on historic carried loads." 47 C.F.R. § 4.9(d). With respect to wireless facilities, reporting is required when an outage of at least 30 minutes is experienced on facilities owned, operated, leased, or otherwise utilized: "(1) Of a Mobile Switching Center (MSC) (2) That potentially affects at least 900,000 user minutes of either telephony and associated data (2nd generation or lower) service or paging service; (3) That affects at least 1,350 DS3 minutes; (4) That potentially affects any special offices and facilities . . . other than airports through direct service facility agreements; or (5) That potentially affects a 9-1-1 special facility . . ." 47 C.F.R. § 4.9(e). With respect to wireline facilities, reporting is required when an outage of at least 30 minutes is experienced on facilities owned, operated, leased, or otherwise utilized: "(1) Potentially affects at least 900,000 user minutes of either telephony or paging; (2) Affects at least 1,350 DS3 minutes; (3) Potentially affects any special offices and facilities . . . ; or (4) Potentially affects a 9-1-1 special facility . . ." 47 C.F.R. § 4.9(f).

¹⁶⁴ *NPRM*, 26 FCC Rcd at 7178-79 ¶ 27.

¹⁶⁵ See, e.g., XO Comments at 10.

¹⁶⁶ CTIA Comments at 8.

account the unique characteristics of the present broadband network. MegaPath further argues that “[R]equiring a report whenever the backbone experiences some service degradation is overly inclusive and will not yield meaningful data or lead to discussions of the root causes for an outage.”¹⁶⁷

78. CenturyLink maintains that if the Commission extends outage reporting requirements to interconnected VoIP service providers, the definition of an interconnected VoIP outage must be limited to the complete loss of service or connectivity.¹⁶⁸ Similarly, TIA asserts that outage thresholds should be set at a significant loss of functionality for primary uses as opposed to temporary degradations in service that still allow for basic uses.¹⁶⁹

79. Several commenting parties do not support the concept of “loss of generally-useful availability or connectivity” in differentiating among outages. For example, MetroPCS states that because of how the Internet is designed, the cause of service degradations may not be clearly identifiable, particularly in a limited timeframe. MetroPCS argues that a broad standard of “loss of generally-useful availability and connectivity” exacerbates the problem of precisely associating an outage with underlying network conditions. Further, MetroPCS argues that the degradation of a real-time voice service immediately and negatively impacts the service experienced by the user, but that a “loss of generally-useful availability and connectivity” can mean many things, including a five-second delay, as an email is rerouted, which may not be noticeable to the end-user.¹⁷⁰ Similarly, Vonage argues the Commission should not require service providers trigger outage reporting based on “loss of generally-useful availability or connectivity.” Vonage agrees with CTIA’s arguments that such reporting is vastly different from that required of wireline and wireless communications providers. Vonage further argues that the measures proposed in the *NPRM* – packet loss, latency, and jitter – do not relate to actual outages, but are instead measures of call quality. Vonage further argues that the collection of such quality of service information simply will not indicate when a VoIP customer loses the ability to make an emergency call. Therefore, Vonage contends that an outage should include only the complete loss of ability to complete calls.¹⁷¹

80. *Discussion.* We apply to interconnected VoIP services¹⁷² the current Part 4 definition of an “outage” as “a significant degradation in the ability of an end user to establish and maintain a channel of communications as a result of failure or degradation in the performance of a communications provider’s network.”¹⁷³ We note, however, that the triggering criteria for a reportable “outage” for interconnected VoIP outage reporting purposes that we adopt today excludes the concept of a “loss of generally-useful availability and connectivity” proposed in the *NPRM*¹⁷⁴ based on performance degradations. As discussed above, we defer a decision on that issue.¹⁷⁵ For the purposes of the rules we adopt today, a “significant degradation” resulting in “the complete loss of service or connectivity to customers” is a reportable outage if it meets the reporting criteria and thresholds.

¹⁶⁷ MegaPath Comments at 8.

¹⁶⁸ CenturyLink Comments at 6.

¹⁶⁹ TIA Comments at 6.

¹⁷⁰ MetroPCS Comments at 10-11.

¹⁷¹ Vonage Reply Comments at 6.

¹⁷² Included are affiliated and non-affiliated entities that maintain or provide communications networks or services used by the provider in offering such communications.

¹⁷³ 47 C.F.R. § 4.5(a).

¹⁷⁴ *NPRM*, 26 FCC Rcd at 7178-79 ¶ 27.

¹⁷⁵ *Id.*

81. Although similar arguments in favor of a more-narrow definition of an outage were raised and rejected by the Commission in 2004 when the existing Part 4 Rules were adopted,¹⁷⁶ we are persuaded by the recent arguments of the parties that the proposed reporting of an interconnected VoIP outage be based on the “the complete loss of service or connectivity to customers.” We agree with Vonage’s rationale that triggering the reporting of an interconnected VoIP outage based on “the loss of a user’s ability to make or receive a call,” as opposed to the “loss of generally-useful availability and connectivity,” as measured by packet loss, latency, and jitter standards, would avoid the need to revise [packet loss, latency, and jitter] standards as providers continue to improve performance.¹⁷⁷

82. Furthermore, we accept MetroPCS’s argument that determining what constitutes a “loss of generally-useful availability and connectivity” in a broadband environment (which includes the environment in which interconnected VoIP service operates) is considerably more complicated than in the legacy network context. In a broadband environment, voice is a real-time application that utilizes broadband connectivity and is more sensitive to network impairments than non-real-time applications such as email.¹⁷⁸ Although we believe performance degradations do affect the ability of facilities-based and non-facilities-based interconnected VoIP service providers to establish and maintain 9-1-1 calls, adopting a bright-line reporting criteria reduces the burden on the providers while, we expect, delivering to us the information we need. Should the Commission determine in the future that a more nuanced definition of “outage” is needed, the Commission can revisit the issue at a later time.

3. Reporting Thresholds

83. As discussed below, we conclude that the outage reporting thresholds for interconnected VoIP service outages should be similar to the existing Part 4 wireline and wireless communications service outage reporting thresholds. As indicated above, we address here only those outages that result from a complete loss of service and not those that are the result of performance degradation.

84. *Proposal.* Based on how interconnected VoIP service is typically configured and provided, the *NPRM* proposed that a significant degradation of interconnected VoIP service exists and must be reported when an interconnected VoIP service provider has experienced an outage or service degradation for at least 30 minutes: (a) on any major facility (e.g., Call Agent, Session Border Controller, Signaling Gateway, CSCF, HSS) that it owns, operates, leases, or otherwise utilizes; (b) potentially affecting generally useful availability and connectivity of at least 900,000 user minutes (e.g., average packet loss of greater than one percent for 30,000 users for 30 minutes); or (c) otherwise potentially affecting special offices, or special facilities, including 9-1-1 PSAPs.¹⁷⁹

85. *Comments.* Although NASUCA comments that it is plausible that industry would be tracking these aspects of their operations in order to compete effectively in relevant markets,¹⁸⁰ most industry commenters oppose the adoption of any performance degradation metric (e.g., packet loss,¹⁸¹

¹⁷⁶ See 2004 Part 4 Order and *FNPRM*, 19 FCC Rcd at 16862 ¶ 55 n.182.

¹⁷⁷ Vonage Comments at 4.

¹⁷⁸ The VON Coalition states that only packet loss in the 5-7 percent range – as opposed to the proposed 1 percent threshold – would degrade service such that VoIP service would be significantly impaired, and similarly, only latency in the range of 250-300 ms would seriously impair service. See VON Coalition Comments at 9-10.

¹⁷⁹ See *NPRM*, 26 FCC Rcd at 7200, App. A, proposed rule § 4.9.

¹⁸⁰ NASUCA Reply Comments at 30.

¹⁸¹ See RFC 2680 A One-way Packet Loss Metric for IP Performance Metrics (IPPM) (Sept. 1999), available at https://datatracker.ietf.org/doc/rfc2680/?include_text=1 (last visited Feb. 3, 2012).

latency,¹⁸² and jitter¹⁸³) as a triggering mechanism for a reportable outage. The parties argue the reporting of outages should be based on actual loss of service rather than performance degradation measurements that were proposed in the *NPRM*.¹⁸⁴ AT&T, for example, states that the Commission should develop an outage reporting threshold that incorporates some of the elements of existing wireline reporting standards and, at the same time, eliminates unrealistic reporting deadlines and unnecessary and duplicative reports.¹⁸⁵ It argues that this standard is appropriate because it is consistent with what is used now for traditional telephone service under Part 4 of the rules, which is easier to apply operationally (as many providers are positioned to provide similar reporting today), and competitively fairer (as interconnected VoIP service is not held to a substantially different standard than is legacy telephone service).¹⁸⁶

86. NENA agrees with the comments of AT&T and others who would have the Commission cast the outage reporting requirements in terms of "actual" service interruption, rather than on performance degradation metrics. However, NENA recognizes that some threshold of latency, speed reductions, or jitter can create a "soft outage" condition, under which a customer still technically has service, but cannot effectively use that service.¹⁸⁷

87. Other parties argue that requiring outage reports based on quality of service measurements would greatly increase regulatory compliance burdens and expand the obligations of interconnected VoIP service providers beyond those that apply to providers of circuit-switched telephony under the current Part 4 Rules.¹⁸⁸ Specifically, ACA notes the outage reporting requirements proposed in the *NPRM* are likely to be disproportionately burdensome on smaller providers, particularly the obligation to report outages affecting "special facilities." ACA explains that under the proposed rules,¹⁸⁹ a small VoIP provider would have to report any outage at a "special facility" that occurs for even a very short

¹⁸² See RFC 2681 A Round-Trip Delay Metric for IPPM (Sept. 1999), available at <https://datatracker.ietf.org/doc/rfc2681/> (last visited Feb. 3, 2012).

¹⁸³ See RFC 3393 IP Packet Delay Variation Metric for IPPM (Nov. 2002), available at <http://tools.ietf.org/html/rfc3393> (last visited Feb. 3, 2012). See also RFC 3550 RTP – A Transport Protocol for Real-Time Applications (Jul. 2003), available at <http://www.ietf.org/rfc/rfc3550.txt> (last visited Feb. 3, 2012) for a discussion on estimating the interarrival jitter.

¹⁸⁴ See, e.g., ACA Comments at 1, 7-10; AT&T Comments at 23-24; ATIS Comments at 11-13; CenturyLink Comments at 6-7; CTIA Comments at 8-9; MegaPath Comments at 8; Sprint Comments at 6-8; T-Mobile Comments at 10-12; Time Warner Comments at 4-6; Vonage Comments at 7-8; XO Comments at 3, 10; Wireless Internet Service Providers Association (WISPA) Comments at 5; See also National Emergency Number Association (NENA) Reply Comments at 2; Sprint Reply Comments at 6; T-Mobile Reply Comments at 7-8; Vonage Reply Comments at 7-8, 11; XO Reply Comments at 1.

¹⁸⁵ AT&T Reply Comments at 8-9. AT&T further proposes that all interconnected VoIP providers submit electronically a Final Report within 30 days of discovering that they have experienced on any facilities that they own, operate, lease, or otherwise utilize, an outage of at least 120 minutes' duration: (1) of a non-redundant VoIP network element; (2) that potentially isolates subscribers' service for at least 900,000 user minutes; or (3) potentially affects a 911 special facility (as defined in paragraph (e) of Section 4.5). See AT&T Comments at 23-24.

¹⁸⁶ AT&T argues further that this standard comports with the Commission's stated aim of addressing outages that have the potential of affecting consumers' access to emergency services and that "it provides the Commission with real outage data as opposed to flooding the Commission with useless (i.e., non-consumer affecting) quality of service information." AT&T Comments at 24.

¹⁸⁷ NENA Reply Comments at 2.

¹⁸⁸ ACA Comments at 2-3; Comcast Comments at 5-7; Time Warner Comments at 5; USTA Comments at 1-2.

¹⁸⁹ See *NPRM*, 26 FCC Rcd at 7200 App. A, proposed rule § 4.9.

time. ACA states that most small operators' networks cannot monitor whether a specific user -- whether a household or "special facility" -- has experienced an outage unless and until contacted by the user with a trouble report. The cost associated with requiring small operators with few employees and very minimal operating budgets to update their networks and plants to allow outage monitoring and reporting would impose an undue burden according to ACA.¹⁹⁰

88. With respect to reporting outages or service degradation as a result of a major facility failure (e.g., Call Agent, Session Border Controller, Signaling Gateway, CSCF, HSS), Verizon states that it deploys many of these elements in a redundant, diverse manner such that an outage on a given network element may have no impact on a subscriber's ability to establish and maintain a channel of communications.¹⁹¹ Similarly, AT&T states that, if Part 4 Rules are extended to interconnected VoIP service providers, those service providers should be required to report only those outages or service degradations resulting from major facility failures of non-redundant VoIP network elements.

89. *Discussion.* We adopt outage reporting thresholds for interconnected VoIP service outages similar to the existing Part 4 wireline and wireless communications service outage reporting thresholds. Specifically, we apply to interconnected VoIP service providers¹⁹² the obligation to report when they have experienced, on any facilities that they own, operate, lease, or otherwise utilize, an outage of at least 30 minutes duration: (1) that potentially affects at least 900,000 users; (2) that potentially affects any special offices and facilities (in accordance with paragraphs (a) - (d) of section 4.5); or (3) that potentially affects a 9-1-1 special facility (as defined in (e) of section 4.5), in which case they also shall notify, as soon as possible by telephone or other electronic means, any official who has been designated by the management of the affected 9-1-1 facility as the provider's contact person for communications outages at that facility, and they shall convey to that person all available information that may be useful to the management of the affected facility in mitigating the effects of the outage on callers to that facility.

90. We defer action at this time on the performance degradation reporting metrics and thresholds proposed in the *NPRM*.¹⁹³ Based on the record developed in response to the *NPRM*, we believe that the simpler rules we adopt today will provide a clear view into E9-1-1 compliance as well as advance the goals we have laid out above with regard to working with industry to improve performance. We also believe that the rules we adopt today are more consistent with the rules we apply to other providers under the existing rules. Therefore, we will not at this time require reporting based on packet loss, latency, or jitter. Instead, we will require the reporting of an interconnected VoIP outage based on the complete loss of service or connectivity.¹⁹⁴ We believe this approach best balances the Commission's need for interconnected outage reporting data and is less burdensome than the reporting requirements proposed in the *NPRM*.

91. With respect to reporting outages due to major facility failures, we are persuaded by the arguments posed by the commenters and, therefore, will not at this time adopt the proposal in the *NPRM* to require outage reporting when an interconnected VoIP service experiences a major facility failure of a Call Agent, Session Border Controller, Signaling Gateway, Call Session Control Function, or Home

¹⁹⁰ ACA Reply Comments at 5.

¹⁹¹ Verizon Comments at 18.

¹⁹² Included are affiliated and non-affiliated entities that maintain or provide communications networks or services used by the provider in offering such communications.

¹⁹³ *NPRM*, 26 FCC Rcd at 7200 App. A § 4.9(g).

¹⁹⁴ A complete loss of service or connectivity results when an end user is unable to establish and maintain a channel of communications as a result of failure or degradation in the performance of a communications provider's network (an outage). See 47 C.F.R. § 4.5(a).

Subscriber Server. We believe the rules, as adopted, sufficiently account for major facility failures that result in reportable outages meeting the thresholds defined. We recognize a major facility failure of a Call Agent, Session Border controller, Signaling Gateway, Call Session Control Function, or Home Subscriber Server, depending on how the interconnected VoIP service provider has engineered those major facilities, may not necessarily result in a reportable outage meeting the thresholds, and we, therefore, do not require, at this time, the reporting of outages on this basis.

4. Reporting Process for Outages of Interconnected VoIP Service

92. As set forth below, we conclude that the reporting process for significant outages of interconnected VoIP service should differ in certain respects from the proposal in the *NPRM*. Specifically, we extend the time frame for notification of an outage and reduce the number of required submissions.

93. *Proposal.* The *NPRM* proposed to follow the current Part 4 reporting process for interconnected VoIP service providers.¹⁹⁵ Under the current rules, providers are required to notify the Commission with very basic information within two hours of discovering a reportable outage,¹⁹⁶ file an initial report within 72 hours, and file a final report within 30 days that provides detail on the outage.¹⁹⁷ Part 4 specifies the type of information that is to be included at each stage.¹⁹⁸ Final Reports must be submitted by a person authorized by the provider to submit such reports to the Commission and to bind the provider legally to the truth, completeness, and accuracy of the information contained in the report.¹⁹⁹ The Final Communications Outage Report must contain all potentially significant information known about the outage after a good faith effort has been made to obtain it, including any information that was not contained in, or that has changed from, the Initial Report. Besides timing and the content of reporting, the current NORS process provides an electronic reporting template to facilitate outage reporting by those currently subject to our Part 4 rules.²⁰⁰ In the *NPRM*, we proposed to follow the same reporting process.

94. *Comments.* The majority of parties commenting on this issue focused on the burden of (a) filing multiple reports, and (b) filing those reports while simultaneously seeking to resolve the network outage.²⁰¹ Although state government commenters generally support the proposed deadlines,²⁰²

¹⁹⁵ *NPRM*, 26 FCC Rcd at 7191 ¶ 61.

¹⁹⁶ See 47 C.F.R. § 4.9. Pursuant to 47 C.F.R. § 4.11, a Notification must include: "The name of the reporting entity; the date and time of onset of the outage; a brief description of the problem; service effects; the geographic area affected by the outage; and a contact name and contact telephone number"

¹⁹⁷ See 47 C.F.R. § 4.9. Pursuant to 47 C.F.R. § 4.11, the Initial Report must "contain all pertinent information then available on the outage and shall be submitted in good faith." *Id.* A Final Report must "contain all pertinent information on the outage, including any information that was not contained in, or that has changed from that provided in, the Initial report." *Id.*

¹⁹⁸ See 47 C.F.R. § 4.9.

¹⁹⁹ See 47 C.F.R. § 4.11.

²⁰⁰ Reports are submitted electronically, using Commission-approved Web-based outage reporting templates. If there are technical impediments to using the Web-based system, then the reports may be submitted to the Commission by e-mail, FAX, or courier; submissions made by these alternative methods shall contain all the required information. See *id.* This requirement applies to all communications providers covered by the requirements of Part 4. Since we do not propose to change this rule, it would also apply to providers of interconnected VoIP. See http://www.fcc.gov/pshs/outage/nors_manual.pdf (last visited Feb. 3, 2012).

²⁰¹ See, e.g., AT&T Comments at 20-21 (questioning the efficacy of requiring an initial report, and urging that the first notification to the Commission of an outage be filed by the close of the next business day after the outage has been resolved); NCTA Comments at 8-9 (initial notification should be eliminated, and only two reports (one at 72 (continued....)

industry commenters argue that the proposed deadlines would be too restrictive.²⁰³ Opposition to the proposed reporting timeframes centers on several arguments: reporting requires critical personnel to spend time reporting instead of fixing the underlying problem;²⁰⁴ the complexity of the network makes it too difficult to report within two hours;²⁰⁵ and, to develop best practices, the only report needed is a 30-day final report.²⁰⁶ Specifically, the ACA argues that small operators should be required to file reports only well after the incident.²⁰⁷ MetroPCS argues that requiring interconnected VoIP service providers to submit a notification within two hours of a discovered outage not only has possibility of prolonging the outage due to the nature of the requested information, but would also distract providers from what should be their number one priority – solving the problem.²⁰⁸ Verizon recommends that the process be streamlined into a two-tiered reporting process.²⁰⁹ AT&T argues that the deadline for filing the Notification should be longer than the present 120-minute requirement, and that the Initial Report requirement should not be adopted.²¹⁰

95. *Discussion.* We are persuaded by commenters' arguments to adopt a reporting process similar to NORS, but to lengthen the notification interval to allow more time for interconnected VoIP service providers to work the outage problem as opposed to reporting on the outage. We agree with MetroPCS' rationale for lengthening the initial notification in that "this change is particularly important since data networks operate differently than voice networks, and the cause of some degradations of service may not be as clearly identifiable, which can lead to inaccurate reporting, or over-reporting, under strict time constraints."²¹¹ Therefore, with respect to outages that meet the reporting threshold, a notification will be due within 24 hours of discovering that an outage is reportable and a final report within 30 days.

96. Verizon's suggested two-reporting system, in which a provider would file a notification within four hours and a final report within thirty days, makes more sense to us in situations that could have the potential to have a significant negative impact on the 9-1-1 infrastructure. A two-tier report system would still provide a measure of "situational awareness" to allow the Commission to become involved in significant outages early should it choose to do so. Final reports would still give the Commission the opportunity to obtain the full details within the same timeframe as it does so today. Yet, eliminating the initial report would reduce the providers' workloads, and if implemented in conjunction

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hours, the other at 30 days) ought to be required); Verizon Comments at 14-17 (The 120-minute time frame and three-tier reporting structure in the current Part 4 rules already are too burdensome).

²⁰² MDTC Comments at 5-6; NYPSC Comments at 4-5.

²⁰³ See AT&T Comments at 21; ATIS Comments at 12-13; CenturyLink Comments at 21-22; Comcast Comments at 3-4; NCTA Comments at 8-9; Sprint Comments at 9; T-Mobile Comments at 10; Time Warner Comments at 6; Verizon Comments at 10, 14-15; VON Coalition Comments at 10-11.

²⁰⁴ See, e.g., Verizon Comments at 16.

²⁰⁵ See Comcast Comments at 3-4.

²⁰⁶ AT&T Comments at vi, 20.

²⁰⁷ ACA Reply Comments at 5-6.

²⁰⁸ MetroPCS Reply Comments at 5. See also Comcast Comments at 3-4; NCTA Comments at 8; T-Mobile Comments at 10; Verizon Comments at 14-16; VON Coalition Comments at 8.

²⁰⁹ Verizon Comments at 16.

²¹⁰ AT&T Reply Comments at 4.

²¹¹ See MetroPCS Reply Comments at 3.

with a four-hour window for the notification, would likely still provide the Commission with valuable information at the outset of the outage.²¹²

97. We do not, however, adopt the 24-hour interval with respect to outages that may have a significant negative impact on the 9-1-1 infrastructure. For these outages, we adopt Verizon's suggested two-tier reporting structure and require notification for outages that may have a significant negative impact on the 9-1-1 infrastructure within four hours and a final report within 30 days. This provides a measure of "situational awareness" to allow the Commission to become involved in significant outages early should it choose to do so. Final reports would still give the Commission the opportunity to obtain the full details within the same timeframe as it does so today. Yet, eliminating the initial report would reduce providers' workloads considerably without harming the Commission's ability to react in the short term or facilitate the development and application of best practices in the long term.

98. Accordingly, the Commission adopts the following outage reporting requirements for outages of interconnected VoIP service: All interconnected VoIP service providers must submit electronically a Notification to the Commission within four hours of discovering that they have experienced on any facilities that they own, operate, lease, or otherwise utilize, an outage of at least 30 minutes duration that potentially affects a 9-1-1 special facility. In such situations, they also must notify, as soon as possible by telephone or other electronic means, any official who has been designated by the management of the affected 9-1-1 facility as the provider's contact person for communications outages at that facility, and the provider must convey to person all available information that may be useful to the management of the affected facility in mitigating the effects of the outage on efforts to communicate with that facility. Such timing of the Notification targets conditions in which the 9-1-1 infrastructure is most likely to experience a direct, negative impact, and singles out a short Notification requirement while balancing costs and burdens.²¹³

99. Interconnected VoIP service providers who have not experienced on any facilities that they own, operate, lease, or otherwise utilize, an outage of at least 30 minutes duration that potentially affects a 9-1-1 special facility, but who have rather experienced on any facility that they own, operate, lease or otherwise utilize, an outage of at least 30 minutes duration: (a) that potentially affects at least 900,000 user minutes of interconnected VoIP service and results in complete loss of service; or (b) that potentially affects any special offices and facilities, must submit electronically a Notification to the Commission within twenty-four hours of discovering such an outage. Such timing of the Notification therefore appropriately applies a less stringent time reporting standard, recognizing that under such conditions the 9-1-1 infrastructure is less likely to experience a negative impact than described in the previous paragraph but the ability of users to make individual 9-1-1 calls may nonetheless be impaired. Accordingly, the design of the two different timing standards under the adopted reporting scheme balances different potential benefits with costs and burdens.²¹⁴

100. Finally, regardless of which of the two above conditions prompts the Notification, not later than 30 days after discovering the outage, the provider must submit electronically a Final

²¹² Verizon Comments at 16.

²¹³ Examples of outages in which the interconnected VoIP service provider must submit an electronic Notification to the Commission within four hours include: (1) loss of all facilities (*i.e.*, no reroute) connecting a selective router to a PSAP; and (2) complete loss of the ability to provide location information (*i.e.*, Automatic Location Information) for interconnected VoIP calls.

²¹⁴ Examples of outages in which the interconnected VoIP service provider must submit an electronic Notification to the Commission within twenty-four hours include: (1) complete loss of an access router; and (2) loss of all facilities connecting the access router to the backbone network. These two examples illustrate that the outage would affect all interconnected VoIP calls, not just calls to 9-1-1.

Communications Outage Report to the Commission. Moreover, we are adopting a very similar level of specificity in reporting content and the same electronic reporting processing as is required by NORS, including utilizing an electronic reporting template to show the various types of information that should be reported by providers.

101. The process we adopt today for reporting significant outages of interconnected VoIP service reduces the burden on providers from that proposed in the *NPRM*. Reducing the number of reports from three to two and extending the time frame for reporting will provide the Commission with the information it needs while reducing the reporting burden on the providers. In addition, we believe it is likely that most interconnected VoIP service providers currently collect information on significant outages in the ordinary course of their business in order to serve their customers effectively.²¹⁵ Therefore, on balance, we conclude that the reporting burden is minimal and well-justified by the benefits to 9-1-1 reliability described above.

E. Application of Part 4 Rules to Voice Service Provided Using New Wireless Spectrum Bands

102. In the discussion below, we clarify that Part 4 of the rules currently covers all providers of CMRS voice (and paging) service regardless in which spectrum band the service is provided and that the process that applies to reporting outages of these services should be the process in the current Part 4 rules.

1. Clarification of Application of Part 4

103. *Proposal.* In the *2004 Part 4 Order and FNPRM*, the Commission extended its outage reporting requirements beyond wireline providers to include wireless providers. In that decision, the Commission enumerated several types of licensees providing wireless service that would be covered by the Part 4 outage reporting obligations.²¹⁶ Since that time, licensing in additional spectrum bands, e.g., Advanced Wireless Services (AWS) and 700 MHz licensing, has become available for wireless services. The *2004 Part 4 Order and FNPRM* suggests that the Commission intended to extend the scope of outage reporting to include all non-wireline providers, including new technologies developed after the adoption of the *2004 Part 4 Order and FNPRM*.²¹⁷ In the *NPRM*, we sought comment on whether we should

²¹⁵ See *supra* notes 103 and 106 and accompanying text (discussion of several commenters on information collected. No commenter claims an undue burden will result from the information collection requirement adopted here). In the *2004 Part 4 Order and FNPRM*, we found that most of the providers that would be subject to the reporting requirements and process adopted therein were collecting much of the same information that would be required to be reported under Part 4. See *2004 Part 4 Order and FNPRM*, 19 FCC Rcd at 16912-14 ¶ 166-69; see also *1992 Part 4 Report and Order*, 7 FCC Rcd at 2013 ¶ 17.

²¹⁶ See *2004 Part 4 Order and FNPRM*, 19 FCC Rcd at 16922, App. B. Those services are reflected in the Section 4.3(f) of the Commission's rules, which defines "wireless service providers" for purposes of Part 4 to include:

Commercial Mobile Radio Service communications providers that use cellular architecture and CMRS paging providers. In particular, they include Cellular Radio Telephone Service (part 22 of the Commission's Rules) providers; Personal Communications Service (PCS) (part 24) providers; those Special Mobile Radio Service (part 90) providers that meet the definition of "covered CMRS" providers pursuant to §§ 20.18(a), 52.21, and 52.31 of the Commission's rules, those private paging (part 90) providers that are treated as CMRS providers (see of this chapter); and narrowband PCS providers (part 24) of this chapter. Also included are affiliated and non-affiliated entities that maintain or provide communications networks or services used by the provider in offering such communications.

²¹⁷ In the order extending the scope of the outage reporting rules beyond wireline carriers and establishing the current outage rules, the Commission stated that it would "adopt [its proposal in the *NPRM*] to extend mandatory (continued....)"

amend Section 4.3(f) to clarify and reflect this meaning.²¹⁸ For instance, we asked if the rule should be amended to state explicitly that the rule also applies to new services using spectrum bands or new wireless technologies that come into being after the adoption of the rule.²¹⁹

104. *Comments.* MetroPCS argues that competition and innovation are best served by not extending the current outage reporting rules to new spectrum bands or technologies, including AWS and 700 MHz.²²⁰ It, however, recognizes that if the Commission were to adopt MetroPCS's recommendation to not extend the current *Part 4 Rules* to newly licensees in the AWS and 700 MHz spectrum bands, an unlevel wireless service provider playing field may result.

105. The WCS Coalition also argues that AWS, 700 MHz, WCS and other similarly situation licensees be exempted from new Part 4 outage reporting requirements until such time as they are required to meet their initial performance or substantial service obligations under their service-specific rules.²²¹

106. *Discussion.* We believe that the existing rules²²² apply to wireless service providers including Commercial Mobile Radio Service communications providers that use cellular architecture and CMRS paging providers.²²³ That includes AWS and 700 MHz, as well as Personal Communications Service (PCS), Broadband Radio Service (BRS) that elect common carrier service, Educational Broadband Service (EBS) that elect common carrier service, and Wireless Communications Service (WCS) wireless service providers, *inter alia*, operating as CMRS communications providers that use cellular architecture or as CMRS paging providers, are subject to the outage reporting obligation. We also believe that the 2004 *Part 4 Order and FNPRM* extended the scope of outage reporting to include all non-wireline providers, including new technologies developed after the adoption of the 2004 *Part 4*

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outage reporting to non-wireline communications providers" 2004 *Part 4 Order and FNPRM*, 19 FCC Rcd at 16855 ¶ 46. In the same proceeding's *NPRM*, the Commission proposed "to extend our disruption reporting requirements to communications providers who are not wireline carriers," and further explained that "[b]y the term 'communications provider' we mean an entity that provides two-way voice and/or data communications, and/or paging service, by radio, wire, cable, satellite, and/or lightguide for a fee to one or more unaffiliated entities." New Part 4 of the Commission's Rules Concerning Disruptions to Communications, ET Docket No. 04-35, *Notice of Proposed Rulemaking*, 19 FCC Rcd 3373, 3375 ¶ 1, n.1 (2004). More specifically, in that proceeding's *NPRM* concerning "Application to Wireless Communications," the Commission stated that "we propose to extend our outage reporting requirements to wireless providers." *Id.* at 3381-82 ¶ 14. The Commission further explained:

From this point forward, we use the phrase 'wireless services' to refer to communications that are provided using cellular architecture in the Cellular Radio Telephone Service ('CRTS') (Part 22 of the Commission's Rules); Personal Communications Service ("PCS") (Part 24); and enhanced Special Mobile Radio Service ('SMRS') (Part 90) (such as that provided by NEXTEL). It is also our intention to include Short Message Service ('SMS') communications, which consist of short text messages (typically 20 octets or less), as well as CMRS paging services (*see* 47 C.F.R. §§ 20.9(a) (1), (6), 22.99, 22.507(c), and 90.7) and narrowband PCS (Part 24), as wireless services. Entities that provide wireless services will be referred to as 'wireless service providers.'

Id. at 3381 ¶ 14 n.30.

²¹⁸ *NPRM*, 26 FCC Rcd at 7188-89 ¶ 55.

²¹⁹ *Id.*

²²⁰ MetroPCS Comments at 20.

²²¹ Wireless Communication Service Coalition Comments at 3.

²²² *See* 47 C.F.R. § 4.3(f).

²²³ Included are affiliated and non-affiliated entities that maintain or provide communications networks or services used by the provider in offering such communications.

*Order and FNPRM.*²²⁴ The 2004 Part 4 Order and FNPRM²²⁵ included an illustrative list of wireless services subject to the outage reporting obligation. To eliminate any potential for confusion, we amend the rule by eliminating the specific example services. In doing so, we will avoid any potential for confusion as to the rule's scope as new spectrum bands are authorized and/or reallocated.

107. We are not persuaded by commenters' arguments that AWS and 700 MHz services should be exempt from outage reporting requirements. As MetroPCS acknowledges, to provide an exemption for AWS and 700 MHz would lead to an unlevel playing field among competing mobile service providers. Moreover, these newer wireless technologies are forming the core of major deployments whereby an outage could impact an increasingly significant number of users.²²⁶

2. Reporting Process

108. *Discussion.* We conclude that the reporting process as reflected in the existing reporting structure in NORS, including the timing of outage reports, should be the same for AWS and 700 MHz wireless service providers as for the other wireless service providers. Since we have clarified that Section 4.3(f) should be read broadly to include such services as AWS and 700 MHz as among those wireless service providers covered by the Part 4 reporting obligations,²²⁷ it follows that the technical requirements for making the reports used for these other wireless service providers should also apply to AWS and 700 MHz service providers. We see no technical or policy reason that would warrant different treatment.

IV. SHARING OF INFORMATION AND CONFIDENTIALITY

109. As discussed below, we apply the same confidential treatment and restricted information sharing to reports of interconnected VoIP service outages as currently apply to outage reports of services already subject to Part 4 of the rules.

110. *Proposal.* The NPRM proposed to treat outage reports filed with respect to interconnected VoIP service as presumptively confidential, as is the case for outage reports currently filed under Part 4.²²⁸ The NPRM also sought comment on making aggregated information across companies public (e.g., total number of incidents by root cause categories), and whether the Commission should share this new outage information with other Federal agencies on a presumptively confidential basis,²²⁹ as it currently does under Part 4 with respect to legacy technologies.²³⁰

²²⁴ See *supra* note 217 and accompanying text.

²²⁵ See 47 C.F.R. § 4.3(f).

²²⁶ See Matt Buchanan, *Verizon's \$9.36 Billion 700 MHz Plans: High-Speed 4G LTE Network Up and Running before AT&T*, Gizmodo, April 4, 2008, available at <http://gizmodo.com/376103/verizons-936-billion-700mhz-plans-high-speed-4g-lte-network-up-and-running-before-att> (last visited Feb. 7, 2012).

²²⁷ See *supra* notes 216-217 and accompanying text.

²²⁸ NPRM, 26 FCC Rcd at 7192 ¶ 66. 47 C.F.R. § 4.2 provides that "[r]eports filed under this part will be presumed to be confidential. Public access to reports filed under this part may be sought only pursuant to the procedures set forth in 47 CFR § 0.461." See also 2004 Part 4 Report and Order, 19 FCC Rcd at 16856.

²²⁹ See 47 C.F.R. § 0.442. See also 47 U.S.C. § 154(i) (authorizing Commission to "perform any and all acts, make such rules and regulations, and issue such orders, not inconsistent with the [Communications] Act, as may be necessary in the execution of its functions").

²³⁰ NPRM, 26 FCC Rcd at 7192 ¶ 66. We note that, in its *ex parte* filing on February 8, 2012, NARUC requests that the Commission provide State commissions with an opportunity to have direct and immediate access to outage reporting data and to all outage reports filed by interconnected VoIP service providers. See NARUC February 8, 2012 Ex Parte Filing. NARUC's request is beyond the scope of this proceeding.

111. *Comments.* Most commenters addressing the issue support treating reported information as presumptively confidential.²³¹ ATIS, AT&T, CenturyLink, and New York PSC support the Commission's sharing of information with other Federal agencies.²³² AT&T, CenturyLink, ATIS, and WISPA do not oppose the public disclosure of aggregated outage information provided the individual service provider data will not be identified,²³³ while the Telecommunications Industry Association (TIA) opposes the public disclosure of the aggregated information, pointing out that the Commission has acknowledged that "disclosure of outage reporting information to the public could present an unacceptable risk of more effective terrorist activity,"²³⁴ and that the record on outage reporting has clearly established that reports should be protected by the Freedom of Information Act.²³⁵ Also, TIA believes that the record reflects wide consensus for maintaining confidentiality for data submitted through the NORS system.²³⁶

112. *Discussion.* Consistent with Section 4.2 of the Rules that affords a presumption of confidentiality to outage report filed pursuant to Part 4 of the Rules, we direct that individual outage reports of interconnected VoIP service providers also be treated on a presumptively confidential basis, that sharing of such reports with other Federal agencies, as needed, be conducted on the same basis, and that aggregated information across providers may be publicly reported. As addressed in the *2004 Part 4 Order and FNPRM*, the Commission makes outage reports available to the U.S. Department of Homeland Security (DHS), pursuant to the authority of DHS under the Homeland Security Act of 2002.²³⁷ Sharing confidential materials with other Federal agencies is governed by Section 0.442 of the Commission's rules, which provides that the Commission may share with other Federal agencies materials received under a request for confidential treatment or that are presumptively confidential, and the confidentiality of the records travels with the records.²³⁸

²³¹ ATIS Comments at 19; AT&T Comments at 22; CenturyLink Comments at 22; NYPSC Comments at 2-3, 7; T-Mobile Comments at 12; TIA Comments at 11; Time Warner Comments at 6, n.14.

²³² AT&T Comments at 22; CenturyLink Comments at 23; NYPSC Comments at 7-8; T-Mobile Comments at 12; VON Coalition Comments at 11, n.11. *See also* NASUCA Reply Comments at 15-19 (arguing that information should not be considered presumptively confidential, and noting MDTC's comment that state and local entities often serve as the first line of defense for public safety and emergency situations, where delays in acquiring outage data carry serious consequences. *Id.*, citing MDTC Comments at 8-9).

²³³ AT&T Comments at 22; ATIS Comments at 19; CenturyLink Comments at 22; WISPA Comments at 7. *See also* T-Mobile Comments at 12; TIA Comments at 11-12; Time Warner Comments at 6, n.14 (all generally opposing direct release of information).

²³⁴ TIA Comments at 11, citing *2004 Part 4 Order and FNPRM*, 19 FCC Rcd at 16833 ¶ 3..

²³⁵ *Id.*

²³⁶ *Id.* citing California Public Utilities Commission Comments, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137 (filed Aug. 2, 2010) at 9; District of Columbia Public Service Commission Comments, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137 (filed Aug. 2, 2010) at 3; Comments of Massachusetts Department of Telecommunications and Cable, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, 09-137 (filed Aug. 16, 2010), New York Public Service Commission Comments, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, at 3 (filed Aug. 2, 2010); Qwest Communications Comments, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, at 12-14 (filed Aug. 2, 2010).

²³⁷ *See 2004 Part 4 Order and FNPRM*, 19 FCC Rcd at 16856 ¶47 n.143.

²³⁸ 47 C.F.R. §0.442. Section 0.442 is based on 44 U.S.C. § 3510, which provides that, if information obtained by an agency is released by that agency to another agency, all the provisions of law (including penalties) that relate to the unlawful disclosure of information apply to the officers and employees of the agency to which information is released to the same extent and in the same manner as the provisions apply to the officers and employees of the (continued....)

113. Publicly reported aggregate data would have the benefit of increasing the public dialogue on the reliability and emergency preparedness of interconnected VoIP service provider while imposing no additional cost or burden on the providers given that their identities would not be revealed. The Commission order to which TIA refers in support of its contention that aggregated data should not be publicly reported, does not address the release only of aggregated data contemplated here, but rather addresses the release of outage reporting information in an unredacted form, which could reveal potentially harmful details about particular network vulnerabilities if the information disclosed were to include a provider's name, specific geographic location(s), particular network characteristics and limitation, *etc.*²³⁹ Our action to allow public reporting of aggregated information across providers does not extend to such raw data. On the narrower issue of aggregated data, most commenters addressing the issue believe that the information should be publicly released. Indeed, our approach to confidentiality here is identical to the approach we have taken with regard to outage reports from traditional providers subject to the existing Part 4 rules; we are aware of no problems resulting from the current approach.

V. CONTINUING VOLUNTARY DIALOGUE REGARDING INTERNET SERVICE PROVIDER OUTAGE ISSUES

114. The *NPRM* addressed whether the Commission should extend its outage reporting requirements to significant outages of broadband Internet service, and if so, what outage metrics and thresholds should apply.²⁴⁰ We believe that the technical issues involved in identifying and reporting significant outages of broadband Internet services require further study. The record in this proceeding reflects a willingness on the part of broadband Internet service providers to participate in a voluntary process to improve the Commission's understanding of the underlying technical issues associated with broadband Internet service outages to assist public safety and first responders in protecting the American people.²⁴¹

VI. CONCLUSION

115. For the reasons stated above, we adopt outage reporting requirements for interconnected VoIP service providers. We conclude that this action will best serve the public interest by enabling the Commission to obtain the necessary information regarding services disruptions in an efficient and expeditious manner. This action addresses the need for rapid, full, and accurate information on service disruptions that could affect homeland security, public health and safety, including the reliability of the Nation's 9-1-1 system, as well as the economic well being of our Nation. This action takes into account the increasing national trend in greater VoIP service usage and its potential impact on the Nation's 9-1-1

(Continued from previous page) _____
agency which originally obtained the information. 44 U.S.C. § 3510(b)(1).

²³⁹ 2004 Part 4 Order and *FNPRM*, 19 FCC Rcd at 16833 ¶ 3.

²⁴⁰ See *NPRM*, 26 FCC Rcd at 26 FCC Rcd at 7180-90 (2011) (*NPRM*).

²⁴¹ See, e.g., ATIS Comments at 16 (observing that a voluntary reporting program would be flexible and collaborative); AT&T Comments at 17-18 (stating that a voluntary program would better allow the Commission to ascertain what actual reliability issues may exist); CenturyLink Comments at 20-21 (engaging affected broadband ISPs in a collaborative effort to determine relevant metrics and thresholds for defining ISP network outages will yield more productive results); Sprint Comments at 3 (establishing a voluntary pilot program is preferable to mandatory reporting); T-Mobile Comments at 10 (positing that voluntary reporting based on metrics developed by industry groups and standards bodies provides the necessary flexibility to obtain outage information best suited to emerging technologies); TIA Comments at 5 (noting that intra- and inter-industry voluntary efforts are already currently underway that adequately address reliability and resiliency concerns, including best practices, standards, and public-private efforts) (footnote omitted); Verizon Comments at 8 (noting that to the extent the Commission may require additional data on broadband reliability to perform its statutory obligations, the Commission could promote the industry's establishment of a voluntary IP outage reporting program).

infrastructure, and the increasing importance of IP networks, on which U.S. consumers increasingly rely for their safety and well being. We make these additions to our existing communications outage-reporting requirements to fulfill the objectives and mandates of the Communications Act.

VII. PROCEDURAL MATTERS

A. Accessible Formats

116. To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (tty).

B. Final Regulatory Flexibility Analysis

117. As required by the Regulatory Flexibility Act of 1980, *see* 5 U.S.C. § 604, the Commission has prepared a Final Regulatory Flexibility Analysis (FRFA) of the possible significant economic impact on small entities of the policies and rules addressed in this document. The FRFA is set forth in Appendix B.

C. Paperwork Reduction Act Analysis

118. We analyzed this Report and Order with respect to the Paperwork Reduction Act of 1995 (“PRA”)²⁴² and determine it contains modified information collection requirements.²⁴³ The Report and Order contains new information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law No. 104-13. It will be submitted to the Office of Management and Budget (OMB) for review under section 3507(d) of the PRA.²⁴⁴ The Commission, as part of its continuing effort to reduce paperwork burdens, invites OMB, the general public, and other interested parties to comment on the information collection requirements contained in this proceeding. In addition, we note that pursuant to the Small Business Paperwork Relief Act of 2002,²⁴⁵ we previously sought specific comment on how the Commission might further reduce the information collection burden for small business concerns with fewer than 25 employees.²⁴⁶ We describe impacts that might affect small businesses, which includes most businesses with fewer than 25 employees, in the FRFA in Appendix B, *infra*.

D. Congressional Review Act

119. The Commission will send a copy of this *Report and Order* in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act (CRA), *see* 5 U.S.C. § 801(a)(1)(A).

VIII. ORDERING CLAUSES

120. Accordingly, IT IS ORDERED, pursuant to Sections 1, 2, 4(i)-(k), 4(o), 218, 219, 230, 256, 301, 302(a), 303(f), 303(g), 303(j), 303(r), 403, 615a-1, 621(b)(3), 621(d), and 1302(a), and 1302(b) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i)-(k), 154(o), 218, 219, 230, 256, 301, 302(a), 303(f), 303(g), 303(j), 303(r), 403, 615a-1, 621(b)(3), 621(d), 1302(a), and 1302(b)

²⁴² The Paperwork Reduction Act of 1995 (PRA), Pub. L. No. 104-13, 109 Stat 163 (1995) (codified in Chapter 35 of title 44 U.S.C.).

²⁴³ We propose to modify existing information collection requirements relating to the Commission’s network outage reporting rules. *See* OMB Control No. 3060-0484.

²⁴⁴ 44 U.S.C. § 3507(d).

²⁴⁵ The Small Business Paperwork Relief Act of 2002 (“SBPRA”), Pub. L. No. 107-198, 116 Stat 729 (2002) (codified in Chapter 35 of title 44 U.S.C.); *see* 44 U.S.C. § 3506(c)(4).

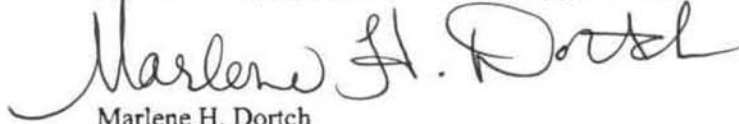
²⁴⁶ *NPRM*, 26 FCC Rcd at 7196 ¶ 80.

and Section 1704 of the Omnibus Consolidated and Emergency Supplemental Appropriations Act of 1998, 44 U.S.C. § 3504, this *Report and Order* in PS Docket No. 11-82 IS ADOPTED and that Part 4 of the Commission's Rules, 47 C.F.R. Part 4 is amended as set forth in Appendix C.

121. IT IS FURTHER ORDERED that the rules adopted herein WILL BECOME EFFECTIVE on the date specified in a Commission notice published in the Federal Register announcing their approval under the Paperwork Reduction Act by the Office of Management and Budget.

122. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this *Report and Order*, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

A handwritten signature in dark ink, appearing to read "Marlene H. Dortch", is written over the printed name.

Marlene H. Dortch
Secretary

APPENDIX A**List of Commenting Parties****Comments:**

1. Alliance for Telecommunications Industry Solutions ("ATIS")
2. American Cable Association ("ACA")
3. AT&T Inc. ("AT&T")
4. CenturyLink ("CenturyLink")
5. Comcast Corporation ("Comcast")
6. CTIA – The Wireless Association ("CTIA")
7. Level 3 Communications, LLC ("Level 3")
8. Massachusetts Department of Telecommunications and Cable
9. MegaPath Communications, Inc.
10. MetroPCS Communications, Inc. ("MetroPCS")
11. Michigan Public Service Commission ("Michigan PSC")
12. National Association of State Utility Consumer Advocates and New Jersey Division of Rate Counsel ("NASUCA")
13. National Cable & Telecommunications Association ("NCTA")
14. New York State Public Service Commission ("NYPSC")
15. PayPal, Inc.
16. Sprint Nextel Corporation ("Sprint")
17. T-Mobile USA, Inc. ("T-Mobile")
18. Telecommunications Industry Association ("TIA")
19. Time Warner Cable Inc. ("Time Warner")
20. United States Telecom Association ("USTA")
21. Verizon and Verizon Wireless ("Verizon")
22. Voice on the Net Coalition ("VON Coalition")
23. Vonage Holdings Corporation ("Vonage")
24. WCS Coalition ("WCS")
25. Wireless Internet Service Providers Association ("WISPA")
26. XO Communications ("XO")

Reply Comments:

1. ATIS
2. ACA
3. AT&T
4. CTIA
5. Financial Services Sector Coordinating Council
6. Fixed Wireless Internet Service Providers (Washington Broadband, Inc.; Shelby Broadband; Vistabeam; BackWoods Wireless; Crescomm Services, Inc.; Communications Specialists Company of Wilmington, LLC; Electronic Solutions, Inc.; NGL Connection; Rock Solid Internet & Telephone; Alluretech; On-Ramp Indiana, Inc.; Rapid DSL, Inc; Central Coast Internet; New Wave Net Corp.; ECSIS.net, LLC; Rural Broadband Networks Services LLC; MohaveBroadBand.com LLC; and Imagine Networks)
7. Laurence Brett Glass d/b/a LARIAT
8. MetroPCS
9. Michigan PSC
10. NASUCA

11. National Association of Telecommunications Officers and Advisors, the National League of Cities, and the National Association of Counties ("NATOA")
12. National Emergency Number Association ("NENA")
13. Public Service Commission of the District of Columbia
14. SANS Institute ("SANS")
15. Sprint
16. TIA
17. T-Mobile
18. United States Internet Service Provider Association ("USISPA")
19. Utilities Telecom Council ("UTC")
20. Vonage
21. Wireless Communications Association International, Inc. ("WCAI")
22. Wireless Internet Service Providers Association
23. XO

Ex parte Submissions:

1. ACA
2. Association of Public-Safety Communications Officials International, Inc. ("APCO")
3. AT&T
4. Blooston Rural Carriers
5. CenturyLink
6. Clearwire
7. Comcast
8. CompTel -The Competitive Communications Association
9. Critical Infrastructure Communications Coalition (Southern Company Services; Duke Energy; National Rural Electric Cooperative Association; American Petroleum Institute; Utilities Telecom Council)
10. CTIA
11. eBay Inc.
12. Edison Electric Institute
13. Frontier Communication Corporation
14. Gallagher, Colin
15. Independent Telephone and Telecommunications Alliance
16. Intrado Inc.
17. Kepner, Rita Marie
18. Level 3
19. MetroPCS
20. NASUCA
21. National Association of Manufacturers
22. National Rural Electric Cooperative Association
23. NATOA
24. NCTA
25. National Telecommunications Cooperative Association
26. NYPSC
27. Organization for the Promotion and Advancement of Small Telecommunications Companies
28. Public Knowledge/Open Technology Initiative
29. SANS
30. Sprint
31. T-Mobile
32. TechAmerica
33. TIA

34. Time Warner
35. UTC
36. USISPA
37. USTA
38. VON Coalition
39. Vonage
40. Verizon
41. WCAI
42. WCS Coalition
43. Windstream Communications
44. XO

Participants at FCC Workshop: Ensuring Broadband Reliability and Resiliency (Sep. 8, 2011):

1. Mark Adams, Executive Director, Technology Operations, Cox Communications
2. John Carlson, representing the Financial Services Sector Coordinating Council,
3. Laurie Flaherty, Coordinator, National 911 Program, U.S. Department of Transportation, National Highway Traffic Safety Administration, Office of Emergency Medical Services, National 911 Office
4. Masaru Fujino, Counselor, Embassy of Japan in the United States, Ministry of Foreign Affairs
5. Stacy Hartman, Director, Federal Public Policy, CenturyLink
6. Roger Hixson, Technical Issues Director, NENA
7. Uffe Holst Jensen, Councillor, European Commission
8. Robert Kondilas, Cloud Strategist, Computer Sciences Corporation
9. Mike Mayemik, Senior Director of Network Operations, Vonage
10. Anthony Myers, Chairman, Maryland Emergency Number Systems Board, State of Maryland
11. Scott F. Robohn, Director, Technology and Solutions – Americas, Juniper Networks
12. Michael Rowley, Interim Chief, Network Reliability, New York Department of Public Service
13. Duminda Wijesekera, Associate Professor, Department of Computer Science, George Mason University